ABSTRACT

A method and a system for decomposition of a multiple channel signal reflecting characteristics of a blood perfused fleshy medium is provided. This technique can be utilized for determination of at least one desired blood parameter. According to the method a portion of the medium is illuminated by amplitude-modulated light of more than two different optic channels having wavelength in a range where the scattering properties of blood are sensitive to light radiation. Further, a light response of the medium sensed, and the multiple channel signal is generated. Thereafter, the multiple channel signal is analyzed that includes: filtering the multiple channel signal and separating at least a part of multiple channels from each other, and providing time evolutions of the light responses of the medium for the part of said multiple channels. According to the invention, the amplitude-modulated light is activated in a composite mode regime employing a combination of parallel and serial modes. The filtering of said multiple channel signal and the separating of said multiple channels from each other both includes applying an adaptive resonator bank to the multiple channel signal.